

Plant-Rich Diets Let You Relax Your Defenses

Now there's another reason why plant food is good for people. The evidence comes from a study comparing a typical "Western" diet—high in refined foods and low in fruits and vegetables—with a diet rich in leafy-green and yellow-orange vegetables and fruits, whole grains, raisins, nuts, and sesame seeds.

When 12 female volunteers switched from the refined-foods diet to the plant-rich diet, they were able to relax their defenses . . . their antioxidant defenses, that is. A copper-containing enzyme, superoxide dismutase, that protects delicate cell parts against oxidation decreased by two-thirds. The selenium-containing antioxidant enzyme, glutathione peroxidase, dropped by one-third.

"Apparently, the volunteers' metabolism didn't need as much enzyme activity because the plant-based diet was rich in phytochemicals," says Leslie M. Klevay. He is at the Agricultural Research Service' Grand Forks Human Nutrition Research Center in North Dakota.

Phytochemicals are the components in plant foods that appear to promote health throughout the life cycle. Many phytochemicals, including certain vitamins and minerals, are excellent antioxidants.

Klevay and colleague Sandra K. Gallagher collaborated on the study conducted at the private SPHERA Foundation in Los Altos, California, by Gene A. Spiller and Bonnie Bruce. The researchers wanted to see how a highly refined Western diet and a plant-rich diet abundant in phytochemicals and fiber would affect blood lipids, antioxidant defenses, and colon function.

Looking at antioxidant enzymes "is a new way to test the antioxidant power of a diet," says Spiller, who led the study.

The 12 women who participated in the 8-week study covered the age spectrum from 34 to 84. For 4 weeks, they consumed the typical Western diet in their own homes. They could eat all the white bread, pasta, pastry, snack foods, convenience foods, meat, fish, poultry, eggs, and dairy products they wanted. But they could

SCOTT BAUER (K8234-2)



These foods are typical of those eaten by the 12 volunteers during a study of how plant-rich diets affect blood lipids, antioxidant defenses, and colon function.

eat no more than two servings a day of fruits and vegetables, avoiding leafy-green and yellow varieties altogether.

Then the women switched to the plant-rich diet for 4 weeks. Green and yellow fruits and vegetables were a must—at least six servings daily. Refined products and designer foods like reduced-calorie and fat-free products were verboten. Instead of white bread, they ate whole-grain bread and as many other whole grains and legumes as they desired.

In addition, they downed 2 tablespoons each of almonds, hazelnuts, pecans, and sesame oil (tahini); a tablespoon of wheat germ oil for cooking or dressing foods; and three 1.5-ounce boxes of raisins from Sun Maid Growers, which funded the study.

Eggs were allowed, but meat, fish, and poultry were limited to a meager 3 ounces per week. Fried foods were out. Dairy products could have no more fat than 1 percent. The women washed down this menu with a cup of ginger tea and two cups of green tea daily.

Not surprisingly, their cholesterol levels, which were high to begin with, dropped on the plant-rich diet.

What's more, "the diet appears to reduce cholesterol oxidation," says Spiller, based on a preliminary look at the data. Oxidized cholesterol is what contributes to artery damage.

So far, research on phytochemicals has mostly focused on one compound, or on a small group of them. But the epidemiologic evidence of health benefits comes from diets rich in fruits and vegetables—not individual compounds. Nutrition researchers can't say which phytochemicals are important; they probably work together.

"This study, using mixed diets, is a nice way to approach the question," says Klevay.—By **Judy McBride**, ARS.

Leslie M. Klevay is at the USDA-ARS Grand Forks Human Nutrition Research Center, P.O. Box 9034, University Station, Grand Forks, ND 58202-9034, phone (701) 795-8454, fax (701) 795-8395, e-mail lklevay@gfhnrc.ars.usda.gov

Gene A. Spiller is at SPHERA Foundation, P.O. Box 338, Los Altos, CA 94023; phone (650) 941-7251, fax (650) 948-8540, e-mail hrscenter@aol.com ♦